

PREVENTION OF BLINDNESS IN NEWBORN BABIES

Report by the Standing Committee on
Conservation of Vision



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REPORT OF THE COMMITTEE ON CONSERVATION OF VISION

C. A. HARPER, M. D., *Chairman*

Your Committee on Conservation of Vision, at the meeting held in Washington in May, 1929, approved having further studies made of the distribution of nitrate of silver to be used in the eyes of the newborn. At the same meeting authorization was given to a general plan for assembling data on laws, regulations, customs, practices, rules, etc., relating to ophthalmia neonatorum, and on results of the distribution of prophylactics, similar to the study made five years previously. Approval was given also to having one representative of the Committee attend the International Congress of Ophthalmology, in Holland, in September, 1929, and to attend a meeting called immediately thereafter in Scheveningen to organize an international association for the prevention of blindness.

* * * * *

Two meetings of the Committee were held during the year, one a joint session with the Committee on Indian Affairs, at Walker, Minnesota, on the evening of October 5th, and another a joint conference with the Minnesota Departments of Health, Education and Welfare, in the State Sanatorium for the tuberculous, near Walker. At these meetings, Committee members present were: Dr. Harper, Chairman, Drs. Chesley, McCormack, Beatty and Guthrie, and Dr. Royer, Secretary.

During the joint session at the sanatorium, full report was made of the Rice Lake clinic for Indians conducted cooperatively by the State Department of Health, several national organizations, and a specially chosen representative of the Committee whose expenses were paid by the National Society for the Prevention of Blindness.

A supplemental report was made at the meeting in Walker regarding methods of securing the chemical studies authorized at the Washington meeting of the Committee, in May, 1929. The Secretary presented correspondence indicating that the Bureau of Standards could not undertake the chemical studies which were contemplated at that time, and he was directed to make similar overtures to the director of the Public Health Service.

Subsequently, a good deal of correspondence took place between the Secretary of the Committee and the Surgeon General's office, resulting in a visit to the office of the director of the Hygienic Laboratory and the formulation of a somewhat broader plan for study than the Committee originally had contemplated. After conference with the

director of the Laboratory, the chief chemist, and staff chemist in the department, it seemed advisable to plan a study that would begin with efforts to determine the standards of purity of the silver nitrate bought for ophthalmic use and that would follow out eight particular lines of procedure, about as follows:

- (1) Secure one-ounce samples of nitrate of silver in amber colored bottles from original stock of states making their own ampuls, and secure at the same time the contents of the label coming with the material at time of purchase;
- (2) Secure similar ounce samples from a few selected chemical houses manufacturing ampuls for sale to state health departments;
- (3) Request the Director of the Public Health Service Laboratory to analyze these samples for standards of purity;
- (4) Request state health departments to make an assay of silver stock, with very accurate determinations of acidity, before beginning to manufacture any new samples, and to remove samples from each batch manufactured for testing at monthly intervals after filling;
- (5) Consider at the next meeting of the Committee on Conservation of Vision a method of persuading state health departments to utilize ampuls lined with paraffin, pending the discovery of a better material for making ampuls;
- (6) Consider with the Committee a recommendation concerning the stamping of ampuls with an expiration date until more exact knowledge may be acquired as to the length of time and conditions which may permit longer storage without deterioration;
- (7) Plan for a study later of the relation of light to any change which might be shown under conditions set out in notes "1" to "6";
- (8) Promote a search for a better container than beeswax for use in dispensing the nitrate of silver, particularly for the warmer states in the south and southwest and for the territories in the tropics.

These negotiations with the Service resulted in helpful advice, but the director of the Laboratory could not see his way clear to secure the full time of a chemist to undertake such studies at this time. Later, he agreed that Dr. La Wall of Philadelphia would be a suitable person to undertake such studies, and that they might better be done by one independent chemist, rather than to have them done in one state laboratory as was at one time contemplated. Authorization was sought

by the Committee Secretary for formulating an appeal for funds to meet the expense of such an independent investigation, but this permission was not secured in time to have the money available and active work started before the present meeting.

With the approval of the Conference, therefore, your Committee would ask leave to continue its efforts to secure this investigation.

* * * * *

Since the Committee last reported on nitrate of silver solution dispensed in wax ampuls, a number of states have begun using ampuls of silver made with black colored wax. No volunteer reports have reached the Committee on their value as contrasted with the wax ampuls formerly used. It is believed that prior to the next annual meeting an inquiry might well be made of each state health officer relative to any change in methods of dispensing ampuls of nitrate of silver, with special inquiry as to whether more satisfactory results have been obtained with the black colored wax than with the older methods of preparation.

The Committee also believes it would be well for all members of the Conference whose organizations distribute nitrate of silver to follow customs already established in certain state departments of health, namely: with each batch of nitrate of silver made up and prepared for distribution, or purchased and stored for distribution, to make selective withdrawals of samples for storage and re-testing at intervals of a month and to plan tabulating the results, beginning with the exact findings at the time ampuls are sealed, exact findings when the first shipment is made, and with findings of a few of the retained samples at monthly intervals for a year.

Your Committee prior to the next annual meeting will ask for a report of these tests for the purpose of making a compiled study to be presented at that time. Pending the studies contemplated, your Committee believes that the custom of giving an expiration date to ampuls, cautioning against their use at the end of six months, may be advisable.

* * * * *

It may be well to call the attention of the whole Conference to the results obtained in a few states from the required use of silver nitrate solution in the eyes of the newborn. In Wisconsin, ophthalmia neonatorum has ceased to be a factor in the cause of blindness. Among school children in classes for the blind or admitted to the state institution for the blind it was formerly the cause of blindness among more than one-fourth of all enrolled. Today, periods of years elapse without finding a child born in the state whose vision was lost from birth infection of the eyes. Several other states have similar enviable records,

while for all schools throughout the country the decline has been directly proportionate to required use of a safe prophylactic immediately after the baby is born.

It would be valuable for statistical guidance if the various State Health Departments would either exact or through the department of Epidemiology determine the cause of blindness in every registrant in residential or day classes for educating and training the blind. Some twelve states are not included in the figures used in the graph showing the decline of blindness caused from birth infections of the eyes.

* * * * *

The Committee was fortunate in being represented by one of its members at the International Congress of Ophthalmology in Holland, September 5th to 13th, 1929, and in being represented at the meeting on September 14th when the International Association for Prevention of Blindness was formed. At the former meeting—a symposium on trachoma—a great deal of interest in the problem was shown by ophthalmologists. A unanimity of opinion was manifested concerning the large amount of vision lost from this disease in various sections of the East and Near East and in certain South American countries, and there was a considerable degree of unanimity on the general method of treating the disease from the standpoint of curative medicine, but no particularly clear-cut and definite plans for prevention were expressed. The full transactions of this Congress will be available shortly. The International Association, with its organization nearing completion, should soon begin to function to the encouragement of health officers.

* * * * *

One aim of the Committee apparently has been accomplished during the year, namely, that of securing to a suitable agency abundant resources for research into the cause of trachoma. Early in January, the Commonwealth Foundation made available to the Oscar Johnson Research Institute of Washington University, in St. Louis, Missouri, the sum of \$250,000, to be used approximately at the rate of \$50,000 a year, for research into the etiology of and other uncleared problems relative to trachoma. This work is being directed by Dr. Harvey J. Howard, an ophthalmologist who had a good many years of experience with trachoma in China and who is now Professor of Ophthalmology at Washington University. Both Mr. Carris and your Secretary have been in frequent conference with Dr. Howard during the year. It should be a matter of great pride to the Committee that its active work in propaganda aiming to arouse interest in trachoma should have had some influence in bringing about an adequate financial provision for

research that may develop facts now lacking, facts which are needed for guidance in the most rational method of eradication of this disease.

* * * * *

The cooperative work through which your Committee was able to utilize much of the time of a staff member of the National Society for the Prevention of Blindness in promoting active interest in vision testing of young children and in the improvement of methods of vision testing in the kindergarten and first, second and third grades, has been actively continued. The services of this worker were requested by state and city health, educational and social work groups in thirteen states, some eighty-five demonstrations of the method having been given since the last meeting.

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The special study authorized relative to laws, regulations, customs, practices, rules, etc., covering the prevention of ophthalmia neonatorum, is filed as a part of this report.

* * * * *

The Secretary of your Committee is serving on one of the sub-committees of the White House Conference on Child Health and Protection assembling data concerning the prevention of blindness and the conservation of vision, and has made available to the White House Conference Committee all data gathered for the Committee on Conservation of Vision.

B. FRANKLIN ROYER, M. D., *Secretary.*

PREVENTION OF BLINDNESS IN NEW-BORN BABIES

(Report by the Standing Committee on Conservation of Vision)

The Committee on Conservation of Vision submits herewith a report on the status of the work for the prevention of ophthalmia neonatorum. It is based chiefly on a check-up made by means of schedules sent during January, 1930, to state and provincial health officers, to departments of obstetrics in medical colleges and to maternity homes and hospitals in the various states and provinces.

Returns of Schedules

As will be noted from the following brief tabulation, returns from health officers were 100 per cent, and from the other two groups they are sufficiently numerous to be representative.

Schedule	Number	
	Mailed	Returned
State and provincial health departments of United States, Canada and the territories of the United States	61	61
Departments of obstetrics in medical colleges of United States and Canada	82	54
Maternity hospitals listed in the register of the American Medical Association	174	100

Regulations and Practices in States and Provinces

In the interest of brevity we shall omit the schedules which, as a matter of fact, covered about the same items as those distributed for the 1926 report of this committee. Certain of the more important features of the laws, regulations and practices in use in the various states and provinces have been included in a summary tabulation for convenient reference. Other points brought out in the schedule will be discussed in the text.

SUMMARY TABLE SHOWING CERTAIN REQUIREMENTS, REGULATIONS AND PRACTICES BY STATE OR PROVINCE

State or Province	Cases of ophthalmia neonatorum reportable to local and state health officer	Prophylactic in eyes of newborn required by law or regulation	Prophylactic distributed by health department	Health officer legally empowered to provide for medical care of cases	Health officer makes investigation of all cases reported
	Yes Partial No	Yes Partial No	Yes Partial No	Yes Partial No	Yes Partial No
Ala....	Y	Y	Y	N	Y
Alas...	N	Y	N	N	N
Ariz...	N	Y	N	N	N
Ark...	Y	Y	N	N	(?)
Cal....	Y	(h)	Y	N	(?)
Col....	Y	N	N	N	Y
Conn...	Y	(hm)	Y	(?)	Y
Del....	Y	Y	Y	Y	Y
D. C...	(m)	(m)	(m)	N	Y
Fla....	(s)	(m)	Y	N	N
Ga....	Y	Y	Y	Y	N
H. I...	Y	Y	Y	Y	N
Id....	Y	Y	N	Y	(?)
Ill....	Y	N	Y	(?)	N
Ind....	N	Y	N	N	N
Ia....	Y	Y	(p)	N	N
Kans...	Y	Y	Y	Y	Y
Ky....	(l)	Y	Y	Y	Y
La....	Y	Y	Y	N	N
Me....	(s)	Y	(p)	N	Y
Md....	(l)	(m)	(m)	Y	Y
Mass...	Y	(h)	(p)	Y	Y
Mich...	(g)	Y	Y	N	N
Minn...	Y	Y	Y	Y	Y
Miss...	Y	(hm)	Y	Y	Y
Mo....	Y	Y	Y	N	Y
Mont...	Y	N	Y	N	N
Neb...	Y	Y	N	N	Y
Nev...	Y	Y	N	N	N
N. H...	Y	Y	(w)	Y	Y
N. J...	Y	Y	Y	Y	(g)
N. M...	Y	Y	Y	Y	Y
N. Y...	Y	Y	Y	Y	Y
N. C...	Y	Y	Y	N	Y
N. D...	Y	Y	N	Y	Y

For footnotes see second page.

SUMMARY TABLE SHOWING CERTAIN REQUIREMENTS, REGULATIONS AND PRACTICES BY STATE OR PROVINCE—(Continued)

State or Province	Cases of ophthalmia neonatorum reportable to local and state health officer	Prophylactic in eyes of newborn required by law or regulation	Prophylactic distributed by health department	Health officer legally empowered to provide for medical care of cases	Health officer makes investigation of all cases reported
	Yes Partial No	Yes Partial No	Yes Partial No	Yes Partial No	Yes Partial No
O.	Y	(h)	Y	(n)	Y
Okla. . .	Y	Y	Y	Y	N
Ore.	Y	Y	N	Y	(?)
Pa.	Y	Y	Y	N	N
P. I. . .	(l)	N	N	Y	N
P. R. . .	Y	Y	Y	N	Y
R. I. . .	Y	(m)	Y	(?)	(?)
S. C. . .	Y	Y	Y	(n)	Y
S. D. . .	Y	Y	(p)	Y	Y
Tenn. . .	Y	Y	Y	Y	(?)
Tex. . .	N	Y	(m)	N	N
Ut.	Y	N	(m)	Y	Y
Vt.	Y	N	(p)	Y	N
Va.	Y	Y	Y	N	Y
Wash. . .	Y	Y	N	Y	N
W. Va. .	Y	Y	Y	N	Y
Wis. . .	Y	Y	Y	Y	N
Wyo. . .	Y	Y	N	N	Y
Alba. . .	Y	Y	N	Y	Y
B. C. . .	Y	Y	(p)	Y	Y
Man. . .	Y	N	(p)	Y	Y
N. B. . .	N	Y	Y	N	N
N. S. . .	(l)	Y	(p)	Y	N
Ont. . .	Y	Y	(p)	Y	Y
Que. . .	Y	N	(p)	N	N
Sask. . .	Y	Y	Y	Y	N

(m) Midwives only
 (p) Physicians only
 (h) Hospitals and maternity homes only
 (w) Welfare societies and hospitals only

(n) Nursing care only
 (g) G. C. cases only
 (l) Local health officer only
 (s) State health officer only
 (?) Not reported

Reporting of Cases

It will be seen from the summary tabulation that there are now only five states and provinces which have no laws or regulations making cases of ophthalmia neonatorum reportable to health authorities (local or state, or both). These are Alaska, Arizona, Indiana, Texas, and New Brunswick. However, it is pertinent to note in this connection that the *practice* of reporting cases is not yet general even in those states which require it. The chief handicap of health officers in their work of prevention is reported as "delayed reporting or failure to report cases of ophthalmia neonatorum." Out of 46 health officers reporting on this item, 30 checked poor reporting as a handicap, five considering it "serious." Moreover, only about one-fourth of the health officers checked the reporting as being "reasonably complete" from all of the groups responsible. Hospitals were given the highest rating on reporting 69% of the reporting states consider hospital reports "reasonably complete"). Physicians came next with 68%, then institutions 61%, nurses 56%, midwives 52%, and parents only 33%.

The table which follows gives the number of cases of ophthalmia neonatorum reported to each state and provincial health office and the rate per 1,000 births. The extreme variation in rates undoubtedly reflects the difference in definition of cases reportable. Moreover, a low rate in many instances may indicate poor reporting.

CASES OF OPHTHALMIA NEONATORUM REPORTED IN 1929 TO STATE AND PROVINCIAL DEPARTMENTS OF HEALTH

State or Province	Reported cases of O. N.		State or Province	Reported cases of O. N.	
	Number	Rate per 1000 births		Number	Rate per 1000 births
Ala.....	26	.41	N. D.....	0	.00
Alas.....	*N. R.	.....	O.....	1156	9.66
Ariz.....	*N. R.	.....	Okla.....	16	.34
Ark.....	21	.55	Ore.....	2	.14
Cal.....	23	.28	Pa.....	151	.75
Col.....	2	.11	P. I.....	*N. R.	.....
Conn.....	2	.07	P. R.....	1	.02
Del.....	1	.24	R. I.....	N. R.	.....
D. C.....	0	.00	S. C.....	164	4.26
Fla.....	4	.15	S. D.....	N. R.	.....
Ga.....	20	.36	Tenn.....	38	.75
Hawaii.....	4	.36	Tex.....	*16	.14
Id.....	1	.09	Ut.....	0	.00
Ill.....	561	4.33	Vt.....	0	.00
Ind.....	*N. R.	.....	Va.....	*N. R.	.....
Ia.....	4	.09	Wash.....	2	.09
Kans.....	2	.06	W. Va.....	6	.15
Ky.....	12	.22	Wis.....	23	.40
La.....	5	.12	Wyo.....	2	.45
Me.....	2	.12			
Md.....	19	.60	Alba.....	N. R.	.....
Mass.....	1399	17.72	B. C.....	N. R.	.....
“ (G. C. 45)	(.57)		Man.....	0	.00
Mich.....	28	.28	N. B.....	*N. R.	.....
Minn.....	0	.00			
			N. S.....	*N. R.	.....
Miss.....	172	3.58	Ont.....	15	.22
Mo.....	24	.38	Que.....	0	.00
Mont.....	0	.00	Sask.....	7	.33
Neb.....	N. R.	.....		
Nev.....	0	.00			
N. H.....	4	.46	Total.....	4059	1.68
N. J.....	42	.61			
N. M.....	7	.70			
N. Y.....	63	.29			
N. C.....	12	.16			

* Reports to state office not required.
N. R.—Not reported

Required Use of Prophylactic at Birth

The use of a prophylactic in the eyes of babies at birth is required by law or by regulation of the health department in 53 of the 61 states and provinces. It is true that in many of these regulations the requirement is so qualified as to exempt certain groups, although in practice these groups may be most conscientious in using a prophylactic. For example, four states make it compulsory for midwives only (District of Columbia, Florida, Maryland and Rhode Island), three for hospitals and homes only (California, Massachusetts and Ohio), and two (Connecticut and Mississippi) for hospitals, homes and midwives. In nine states and provinces the requirement may be waived if parents object. In the following states and provinces no prophylactic is required by law or regulation: Colorado, Illinois, Montana, Philippine Islands, Utah, Vermont, Manitoba and Quebec. The net result is that only 35 states and provinces have legal provision for assuring this valuable protection to all babies.

In all but eight of the 53 states and provinces which require the use of a prophylactic by some or all engaged in midwifery, the particular solution is specified in the laws or regulations. Usually (35 instances) it is 1% silver nitrate, but four (Alaska, Connecticut, North Carolina and Texas) specify 2% and one (Michigan) requires 1½%. In seven of these states and provinces (New Hampshire, New Mexico, New York, Pennsylvania, Texas, Washington and Nova Scotia) "an equally efficient" prophylactic may be substituted. In the remaining five, alternatives are allowed but they also are specified, as silver nitrate or argyrol, and silver nitrate, argyrol or protargol. One state, although permitting a range in strength of the three solutions mentioned, permits much stronger solutions than present medical practice would approve (silver 1 to 4%, argyrol 10 to 50% and protargol 10 to 40%).

Prophylactic Supplied by Health Departments

The practice of supplying prophylactic solutions to physicians and midwives is now being carried on in 47 out of the 61 states and provinces (see table). Of these, 32 supply to both physicians and midwives, 11 supply to physicians only, and four to midwives only. (see map). Most of the states which do not require the use of a prophylactic nevertheless distribute it. It is apparent, however, that in some instances the available supply is too limited, since of the seven states and provinces reporting "failure to supply free prophylactic solutions" as a handicap, five are among those that do make some distribution.

Use of Prophylactic by Physicians and Midwives

Information regarding the extent to which physicians and midwives are actually using prophylactic solutions apparently is not generally

available in the state or provincial offices. Only 34 out of the total 61 carry a question on this point on birth certificates and it is probable that the returns are not currently analyzed. However, from the replies received to our question on "the approximate per cent of births in which prophylactic is being used," it appears that the practice is not yet sufficiently general so that the health officer can afford to let up on his educational work or his enforcement duties. Out of 36 reports, four states and provinces (Alabama, Georgia, West Virginia and Saskatchewan) show physicians using treatment in 75% of the births, or less; out of 29 reports on midwives, seven states (Kentucky, Louisiana, Montana, North Dakota, Oregon, South Dakota and Saskatchewan) show that a prophylactic is being used in 75% of births or less.

Out of 44 health officers reporting on this item, 15 state that they are handicapped by "non-cooperation of physicians as shown by failure to use a prophylactic," one of these being "serious." Of 42 reporting on midwives, 25 are handicapped by "ignorance or incompetence of midwives resulting in non-use of a prophylactic," five of them seriously.

Provision for Treatment in Cases of Ophthalmia Neonatorum

In approximately half (31) of the states and provinces the health officers are legally empowered to provide some type of care (medical, nursing, or hospital) for babies with ophthalmia neonatorum that are not otherwise provided for. In 21 others it is the practice for health officers to use their good offices to secure necessary care; four (Alaska, Arizona, Virginia, Quebec) report no provision; reports on this point are not available from the remaining five.

In the section of the schedule relating to handicaps, 18 health officers report that their preventive work is handicapped by "lack of funds or authority to provide care for the indigent"; five consider it serious. In addition, 26 report as a handicap "lack of available facilities for treatment due to remoteness of patients," three reporting it as serious.

Investigation of Cases by Health Officers

As a control method the most important practice of health officers is that of investigating cases immediately as they are reported so that responsibility may be fixed and adequate treatment started, yet 24 states and provinces report that local health authorities do not make a practice of investigating every case (no information is available from six more). It would seem that the chief reason for this administrative omission is a lack of personnel. Twenty-seven health officers report themselves as handicapped in this way, six of them seriously.

Most of the states and provinces in which cases are routinely in-

vestigated make it a rule to check back to determine whether a prophylactic was used at birth.

Prosecutions for Violations of the Laws

Prosecutions for violations of the laws requiring the use of prophylactic treatment at birth or the reporting of cases are evidently not popular with health officers as a means of enforcement. On every one of the items relating to current practice on this point the "not reported" group is high and among those who did reply the odds are two to one in favor of not prosecuting. The number of prosecutions reported for the year 1929 for the entire group was five, as follows:

<i>State</i>	<i>Person</i>	<i>Violation</i>
Kentucky	Physician	Non-use of prophylactic
Virginia	Physician	Non-use of prophylactic
West Virginia	Physician	Non-use of prophylactic
West Virginia	Midwife	Non-use of prophylactic
Michigan	Other	Non-reporting

Dissemination of Information

Education of the public as to the value of prophylactic eye treatment at birth by means of literature distributed is generally, but not always, practiced. Five out of six of the states and provinces distribute prenatal and well-baby literature in which the subject of eye care of infants is covered, and four out of six use venereal disease literature featuring the danger of infection of the eyes at birth. It would seem that the committee could safely recommend treating this subject from an educational standpoint in all such literature.

Teaching of Departments of Obstetrics in Medical Colleges

From the schedules returned by 54 departments of obstetrics in medical colleges of the United States and Canada we gather that physicians are unanimous, or practically so, in their opinions on the value of the essential points of the treatment for the prevention of ophthalmia neonatorum, but they differ in certain details of method.

The points on which there is general agreement are:

- (1) A prophylactic should be used in the eyes of all babies at birth. (No dissenters in group of 54.)
- (2) Treatment should be administered very soon after birth. (No dissenters.)
- (3) Laboratory examinations should be used routinely to determine the causal agent of infections. (No dissenters.)

- (4) Special medical counsel should be secured from eye physicians for the treatment of infections of the eyes of the newborn. Two dissenters.)
- (5) The wisdom of stressing the value of the use of a prophylactic against *all* birth infections of the eyes rather than to emphasize infections from venereal disease. (Four dissenters.)

Some of the other points on which there is a lesser degree of agreement are:

- (1) The importance of reporting all cases of inflammation to health authorities. Out of 53 reporting, 14 do not teach students to report cases and three more urge reporting of gonorrheal infections only.
- (2) The nature, strength and amount of the prophylactic to be used. There seems to be more unanimity on this point than in 1926. Only silver nitrate and argyrol are recommended to students. (45 recommend silver nitrate, eight argyrol and one a choice of either). The strength of silver nitrate varies from 1% to 1½% or 2%, with a very decided preference for 1% (41 out of 46). The strength recommended for argyrol is 20-25%. One or two drops in each eye are the amounts most frequently mentioned, but a few suggest more.
- (3) The method of cleansing eyelids before applying prophylactic. Out of 50 reports received on this item, 28 show a preference for cleansing with some sort of cotton or gauze sponge wet with boric solution, without separating lids; seven others use sterile water, salt solution, olive oil, bichlorid or a choice of one of these. Only two would recommend flushing or irrigation of the eyes themselves, while 11 teach dry sterile wiping and two teach no cleansing whatever. The cautions about gentleness and wiping from the nose outward are frequently mentioned.
- (4) The use of a neutralizing solution after the prophylactic. Of the 46 colleges in which the use of silver nitrate is taught, 30 do not recommend a neutralizing solution; the others use normal salt or boric acid solutions. The neutralizing solutions are recommended quite as frequently after 1% silver nitrate as after the stronger solutions. No one recommends flushing of the eyes after the use of argyrol.
- (5) The type of container to be used for the prophylactic. It is probably indicative of lack of attention to this rather important point that 19 colleges either do not specify the type of container at all or not definitely. Among those who do specify the container,

the preference is for wax ampuls for silver nitrate, although dark glass bottles are used, also, gelatin or rubber ampuls. Containers for argyrol are not specified but its being made up fresh is usually insisted upon.

One important point stressed by professors of obstetrics is the freshness of solutions, whether silver nitrate or argyrol. Since this point was not brought out by a direct question on the schedule their definitions of "fresh" in terms of frequency of preparing new solutions cannot be given. Many recommend highly the silver nitrate in wax ampuls being distributed by boards of health.

Another point brought out in the comments is the importance of getting the solution into the conjunctival sac rather than directly on the cornea.

On the whole, the consensus of opinion among this group of teachers seems to be that no further changes in prophylactic or techniques are necessary, but, rather, a more widespread use of known methods. However, some have expressed a wish for the development of a new prophylactic that will be as efficient as strong silver nitrate, but non-irritating, so that the treatment may be repeated frequently and thus eliminate infections which occur later.

Methods and Results in Maternity Hospitals

Schedules returned by 100 maternity hospitals and homes represent over 50,000 births.

For the most part there is rather close agreement between the methods as taught in medical colleges and those practiced in the institutions reporting.

The following summarizes briefly the points on which there is agreement:

- (1) A prophylactic is used routinely in the eyes of all babies.
- (2) Prophylactic treatment is generally attended to as soon as possible after birth. (80 out of 97 say "immediately" and the other 17 are all under one hour.)
- (3) Silver nitrate is used in a majority of the hospitals, mostly in 1% solution. (73 use silver nitrate; 20 use argyrol; 4 use sometimes one and sometimes the other; the remaining 3 hospitals use silvol, cargentos and protargol.) Different practices may obtain in the services of various staff obstetricians.
- (4) Methods of cleansing before using a prophylactic show about the same distribution and variety as taught in medical colleges, with

the one exception that there is a somewhat higher proportion of hospitals using the flushing method, (14% of the total).

- (5) There is the same difference of opinion on the value of using neutralizing solution after the prophylactic.
- (6) The prophylactic treatment is considered equally dependable against infections other than G. C. in 81 out of 86 institutions reporting.
- (7) In cases of eye inflammation, smears are sent to a laboratory for examination in 85 out of 88 hospitals reporting.

In certain respects the procedures and practices of the hospitals are falling short of the best standards. For example:

Fourteen institutions are using a weaker solution of prophylactic than is now being commonly recommended. (10 use argyrol 5 to 10%, three argyrol 15% and one silver nitrate $\frac{3}{4}$ % or argyrol 15%.) Although the figures are too small to be conclusive our data seems to indicate that there is a tendency toward higher incidence of infected eyes among babies where argyrol under 20% is used (1.5% as against .4%).

In 15, out of the 81 reporting on this point (and probably in a large proportion of those "not reported"), treatment of cases of inflammation is not directed by an ophthalmologist.

Of 77 reporting, 40 do not have cultures sent to a laboratory in cases of inflammation.

Reporting to health authorities is incomplete. Three hospitals say they report no cases and 47 report only G. C. infections out of a total of 86 supplying information. Some of the 14 who did not reply on this point undoubtedly are not reporting cases.

The type of containers used for prophylactic solutions were reported as follows:

	For Silver Nitrate	For Argyrol
Wax ampuls	42	1
Dark glass bottles	15	8
Pearls or gelatin tubes	2	—
Bottles (not specified if dark).....	10	13

With the extensive use of the wax ampul as the container for silver nitrate, the time elapsing before fresh solutions are procured becomes less important. However, it should be noted that of the 23 hospitals reporting on their replacement of argyrol solution only four prepare fresh solutions daily; 12 more do so under two weeks; four from one to two months; one apparently would allow the same solution to be used for six months; and the other two change "when needed."

From data supplied by those institutions which were able to give us the desired information, we have compiled a table showing the incidence of gonorrheal infections, of infections due to other causes, and of chemical irritation among babies born in hospitals and maternity homes. The figures were summarized by type and strength of prophylactic used, but for most groups the totals are too small to warrant conclusions. Based on the total of 30,157 births the results show:

- 0.1% having gonorrheal infections,
- 2.0% having other infections,
- 2.5% having chemical irritations, and
- 95.4% escaping all eye trouble.

The answers would not bring out such complete detail as to indicate whether, where babies were born a few hours prior to entering the hospital or born in an ambulance en route to the hospital, the delay in using a prophylactic may have affected the rates.

No information was obtained as to the end results of cases in terms of loss of vision, but it is probable that good care and treatment were given in every case.

There is every evidence in the schedules submitted that hospitals and homes are aware of the importance of eye care and that, regardless of the methods used, they are careful in their technique.

It was not possible to obtain from maternity hospitals any definite statistics showing the reduction in incidence of birth infections of the eyes since the general use of prophylactic eye treatment at birth. Such statements as are given indicate that prophylactics have been used over a long period of time and that cases of gonorrheal infections rarely or never occur, even in hospitals which admit a large number of mothers with gonorrhea. Among the comments from the various hospitals certain points of their own technique are stressed. For example, one may advocate the use of retractors for opening the lids while another will argue against this practice. On the whole, they seem rather well satisfied with the present good results they are getting and they make no recommendations for improvement.

Ophthalmia Neonatorum in Schools for the Blind

It is unfortunate that the only source of information on the results of the preventive work (the statistics of new admissions to schools for the blind) lags behind the date of accomplishment to the extent of six or seven years. The latest figures available (1928-29) show 66, or 9.5%, of the new admissions with blindness due to ophthalmia neonatorum. The chart shows the reduction in the rate over a 22-year period, based on figures from most of the schools for the blind in the United States. From the same source we have prepared a table showing by states the incidence of blindness due to ophthalmia neonatorum among children starting school. The rates are based on a two year

average, since it is felt that a single year might not be representative. It is unfortunate that this information is not available for all states. Some of the states listed as "not reported" have no school for the blind, but the remainder are chronically delinquent in giving reports to the American Foundation for the Blind, or else they failed to do so for these years.

**FREQUENCY OF DIFFERENT TYPES OF EYE TROUBLE OCCURRING
IN MATERNITY HOSPITALS DURING 1929,
SHOWING TYPE AND STRENGTH OF PROPHYLACTIC USED**

Type and Strength of Prophylactic	Number of Births	Number of cases per 100 births			
		Infections		Chemical Irritation	Escaped all eye trouble
		G. C.	Other		
Silver Nitrate 1%	16119	0.1	2.7	3.3	93.9
" " 1½%	1204	0.1	0.7	0.0	99.2
" " 1-2%	144	0.0	0.0	0.0	100.0
" " 2%	1102	0.0	0.5	3.1	96.4
Total Silver Nitrate	18569	0.1	2.4	3.0	94.5
Argyrol 5%	75	0.0	0.0	0.0	100.0
" 5-10%	221	0.0	4.1	0.0	95.9
" 10%	1967	0.5	1.1	0.4	98.0
" 15%	277	0.0	0.0	1.4	98.6
" 20%	814	0.0	0.0	0.0	100.0
" 25%	834	0.0	0.8	0.5	98.7
Total Argyrol	4188	0.2	0.9	0.4	98.5
Silver Nitrate or Argyrol 1% } 10% }	75	0.0	8.0	0.0	92.0
Silver Nitrate or Argyrol ¾% } 15% }	14	0.0	0.0	0.0	100.0
Silver Nitrate or Argyrol 1% } 20% }	1412	0.0	0.0	0.8	99.2
Silver Nitrate or Argyrol 1% } 25% }	1400	0.0	0.0	1.0	99.0
Silvol 20%	2019	0.1	4.8	0.0	95.1
Cargentos 5%	480	0.0	0.2	4.2	95.6
Protargol 4%	2000	0.1	0.2	6.4	93.3
Total Other Prophylactics	7400	0.1	1.5	2.3	96.1
Total All Prophylactics	30157	0.1	2.0	2.5	95.4

FREQUENCY RATE OF BLINDNESS DUE TO OPHTHALMIA NEONATORUM AMONG CHILDREN STARTING SCHOOL, SHOWN BY STATE FOR LAST TWO SCHOOL YEARS FOR WHICH FIGURES ARE AVAILABLE

State	Total enrollment 1st grade (1927-28)	New admissions with blindness due to O.N. (years 1927-28 and 1928-29)		State	Total enrollment 1st grade (1927-28)	New admissions with blindness due to O.N. (years 1927-28 and 1928-29)	
		Number	Annual rate per 100,000 1st grade pupils			Number	Annual rate per 100,000 1st grade pupils
Ala.....		NR(f)	....	Neb... 39,759		1	1.3
Ariz....		NR	....	Nev... ..		NR(g)	....
Ark... 105,882		3	1.4	N. H... ..		NR(g)	....
Cal... 142,718		5	1.8	N. J... ..		NR(g)	....
Col... 28,825		5	8.6	N. M.. 16,581		21	63.4
Conn.. 37,451		2	2.7	N. Y.. 253,778		11	2.2
Del....		NR(g)	....	N. C... ..		NR	....
D. C... ..		NR(g)	....	N. D... ..		NR	....
Fla....		NR	....	O.... 158,106		7	2.2
Ga....		NR	....	Okla.. 127,574		10	3.9
Id..... 14,658		0	0.0(a)	Ore....		NR	....
Ill.... 172,205		10	2.9	Pa... 233,072		14	3.0
Ind.... 80,225		10	6.2	R. I... ..		NR(g)	....
Ia.... 66,882		6	4.5	S. C... ..		NR	....
Kans.. 49,815		5	5.0	S. D... 20,571		0	0.0(b)
Ky....		NR	....	Tenn... ..		NR	....
La....		NR	....	Tex... ..		NR	....
Me....		NR(g)	....	Ut.... 16,300		0	0.0(c)
Md.... 41,152		2	2.4	Vt....		NR(g)	....
Mass.. 85,866		2	1.2	Va....		NR	....
Mich... ..		NR	....	Wash.. 40,350		0	0.0(d)
Minn.. 71,038		2	1.4	W. Va.		NR(g)	....
Miss... ..		NR	....	Wis... 66,532		1	0.8
Mo.... 91,758		3	1.6	Wyo... ..		NR(g)	....
Mont.. ..		NR	....			
				Total for states reporting			
				1,961,098	120(e)	3.1	

(a) No cases for 5 years

(b) No cases for 8 years

(c) No cases for 4 years

(d) No cases for 4 years

(e) There were 138 cases reported but some of these were from states having more than one school and reports were not in from all

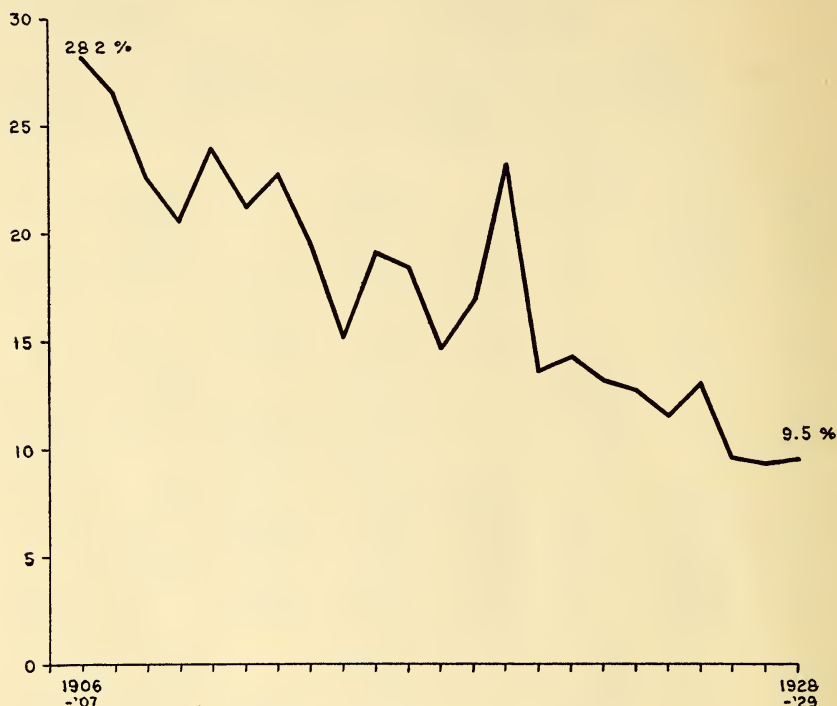
(f) NR is not reported

(g) No state school for the blind

NOTE: This table is subject to revision if information can be obtained from additional states, or if cases reported from one state are chargeable against another.

CHART SHOWING DECREASE IN CASES OF BLINDNESS DUE TO OPHTHALMIA NEONATORUM IN U. S. SCHOOLS FOR THE BLIND

Per cent of new pupils
whose blindness was due
to O. N.



It is noted that the four states which show no cases (South Dakota, Idaho, Utah, Washington) have sustained this good record over a period of years. Other states showing frequency rates well below the average are Wisconsin (0.8 per 100,000 first grade pupils enrolled), Massachusetts (1.2), Nebraska (1.3), Minnesota and Arkansas (1.4). On the other hand, New Mexico seems to have an exceptionally high rate (63.4).

To recapitulate, four states and one province have not yet made ophthalmia neonatorum a reportable disease; and in seven states either the laws or the regulations concerning this point, or their interpretation, would seem to require reports only when the disease is believed or proven to be a gonococcus infection. Health authorities apparently are somewhat loath to exact reports of babies' sore eyes, even where ample provision exists, and are hesitant about beginning prosecutions.

One per cent nitrate of silver in wax ampuls continues to be the popular prophylactic recommended. Only 14 states and provinces now

are not providing prophylactic solutions as a matter of routine to those officiating at childbirth. It is noticeable that some states that have no mandatory requirement for the use of nitrate of silver in the eyes of newborn distribute the preparation to those who are expected to use it.

There would seem to be inadequate provision for medical or nursing care for the newborn baby with inflammation of the eyes, and the answers would indicate that in only 31 states and provinces do the local health authorities make a practice of investigating immediately every case of ophthalmia neonatorum. Exacting report of the use or non-use of a prophylactic on birth certificates is far from universally practiced.

It is definitely noticeable that the professors of obstetrics in the medical schools of the whole continent urge the use of a prophylactic in the eyes of all newborn babies, but, curiously, omit at times to do what state health officers in the state in which the school is located would expect of them, viz.: 14 departments of obstetrics do not teach students to report their cases to the health authorities and three urge reporting of gonorrheal infections only. The committee will be glad to supply the names of these teachers of obstetrics to the state health officers, upon request.

Maternity hospitals with a number of obstetricians on the visiting staff show considerable variation in the custom of using prophylactics in the eyes of the newborn, but for the most part follow the teaching of the medical colleges in their vicinity. It is interesting to note that three maternity hospitals state they report no cases of ophthalmia neonatorum to the health authorities, and 47 indicate they report G. C. cases only. The names of these various hospitals will be reported to the state health officers if requested. It would seem that either the state departments of health, directly, or through city departments of health, should exact of hospitals the same observance of the reporting laws and the same use of eye prophylaxis as would be exacted of physicians or midwives in private practice, particularly in view of the fact that interne service in such hospitals very largely determines the customs of most of our licensed practitioners going out from such services.

Moved, Seconded and Carried that the Report of the Committee on Conservation be adopted.

